Horizons: At Dawn and at Dusk. Poems by **Colin Tolly.** Pp. ix+82. (London: Hodder and Stoughton, 1918.) Price 3*s.* 6*d.* net.

MR. TOLLY is clearly a scholar who has been thrown, like so many others, into the brutalities of war, and who heartens himself by writing verses that recall the happier years. But, though he has studied the ancient classics, and also zoology, his manner is not that of a poet, or even of a teacher, seeking in the concise forms of verse the expression of cumulative research. Why, for example, and for what mechanical reason, did the dead Adonis sail "to sea, on springs"? Does the sun "shine" a beam? And will the general reader, who has still so much to learn about ancestral forms of life, really gather anything from the condensed text-book terminology of pp. 49–60? We might, indeed, be pleasantly surprised to "hear the tune" that the Permian reptiles "sang at sundown . . . pregnant with speech and nightingales"; but we cannot believe that, by any process of selection, "Death . . . endowed with brains the victors" in the struggle for existence. The crowded stanzas on the development of religions are not more satisfactory. It is unfair to suggest what Swinburne or Flecker might have made of them; but, even between Olympos and Salonika, Mr. Tolly has caught only the spray of the high and rising wave of war-time inspiration.

G. A. J. C.

Journal of the Institute of Metals. Vol. xix. Pp. x+316. (London: Published by the Institute, 1918.) Price 21*s.* net.

THE latest volume of this useful journal contains several papers of interest. Prof. Carpenter, in addition to his presidential address, in which he deals with the relations between scientific investigation and training and technical practice, contributes, with Miss Elam, a paper on the cause of unsoundness in bronze castings. The subject is a difficult one, and the principal conclusion, confirmed by the experience of others who took part in the discussion, is that the most important factor in ensuring soundness is the proper control of the pouring temperature. The equilibrium between a molten alloy and the gases dissolved in it still remains somewhat mysterious. Die-casting, especially of alloys of high melting-point, has received little attention in technical journals, although it is widely and successfully used in practice, and the paper by Messrs. Rix and Whitaker is the more welcome on that account. By using an aluminium bronze containing iron, excellent results have been obtained with complicated castings. The discussion turns largely on the behaviour of the dies. Aluminium bronze is also studied from the point of view of the hardness of alloys by Mr. Greenwood, and other matters dealt with are the determination of the grain size of metals and the annealing of aluminium. The volume also includes abstracts of metallurgical papers from all sources.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

Science and the Civil Service.

IN the article on the above subject in NATURE of August 8, the unsatisfactory method of selecting candidates for Civil Service appointments is very justly emphasised. I desire to make the following suggestion, which will obviate the system of patronage and to a great extent that of competitive examination, both of which suffer from serious inherent defects which need not be discussed.

My suggestion is that each university of the United Kingdom be granted the right to nominate each year one or more candidates (according to the number of vacancies) from its most promising honours graduates. A further selection from among the nominees might, if necessary, be made by some form of oral or written examination.

It is improbable that any university would abuse this privilege and thereby discredit itself by nominating a student who is likely to prove a failure. The experience in the selection of the 1851 Exhibition scholars is a sufficient guarantee of the highly satisfactory results of such a system.

The most promising arts and science men in the country would thus become available for Government appointments, and it is to be hoped that with this choice the science departments of the State will in future be administered by men whose training has not been exclusively classical.

J. B. COHEN.

THE ROYAL INSTITUTION: A RETROSPECT.

A RECENT issue of the Proceedings of the Royal Institution contains a reprint of a lecture delivered in its theatre on March 3, 1810, by the then professor of chemistry, "H. Davy, Esq., Sec., R.S." This lecture, as its title-page informs us, was originally published by desire of the managers; it is now reproduced at the suggestion of the Fullerian professor of chemistry. It is entitled "A Lecture on the Plan which it is Proposed to Adopt for Improving the Royal Institution and Rendering it Permanent." To understand the significance of this wording it is necessary to recall some circumstances connected with the early history of the institution.

As conceived by its founder, Benjamin Thompson, a Royalist American who had been created a Count of the Holy Roman Empire by the Elector Palatine of Bavaria, it was intended to be part of an establishment for the benefit of the poor. In 1796 Rumford, who was a practical philanthropist on a pretty broad gauge, and an early worker in what is now styled "domestic science," put forth a

> proposal for forming in London by private subscription an establishment for feeding the poor and giving them useful employment, and also for furnishing food at a cheap rate to others who may stand in need of such assistance, connected with an institution for intro-

ducing and bringing forward into general use new inventions and improvements, particularly such as relate to the management of heat and the saving of fuel, and to various other mechanical contrivances by which domestic comfort and economy may be promoted.

Rumford, as he says in one of his letters to Thomas Bernard, who was associated with him in this project, was

> deeply impressed with the necessity of rendering it *fashionable* to care for the poor and indigent.

A "Society for Bettering the Condition of the Poor" was duly founded, but as regards the associated institution it was decided that it would be

> too conspicuous, and too interesting and important, to be made *an appendix* to any other existing establishment, and consequently it must stand alone, and on its own proper basis.

In 1799 Rumford again broached the subject of his institution for promoting domestic comfort and economy, and conferred with the committee of the "Society for Bettering the Condition of the Poor" concerning the steps to be taken in order to establish,

> by private subscription, a public institution for diffusing the knowledge and facilitating the general and speedy introduction of new and useful mechanical inventions and improvements; and also for teaching, by regular courses of philosophical lectures and experiments, the applications of the new discoveries in science to the improvement of arts and manufactures, and in facilitating the means of procuring the comforts and conveniences of life.

It is unnecessary to state the steps by which the sympathies of people of rank and fortune were enlisted in this enterprise. The moral, social, and political conditions of the time were not without their influence. The idea, as Rumford hoped, became fashionable, and, being fashionable, became popular. Mr. Mellish's house in Albemarle Street was secured as the future home of the institution, and its spacious apartments were quickly transformed into lecture-rooms, museums, library, and offices. Moreover, "a good cook was engaged for the improvement and advancement of the culinary art—one object, and not the least important—for the Royal Institution." The president of the Royal Society, Sir Joseph Banks, who had taken an active part in promoting its foundation, was chosen as the first chairman of its board of managers, Rumford became secretary, and Bernard treasurer. The second volume of the "Reports of the Society for Bettering the Condition of the Poor" contains a long account of the institution, "so far as it may be expected to affect the poor," from the pen of the treasurer, concerning which Dr. Bence Jones, a former secretary and the historian of the foundation, dryly remarks: "It is difficult to believe that the Royal Institution of the present day was ever intended to resemble the picture given of it in this report."

Although ushered into the world under such favourable auspices, the enthusiasm which greeted its birth quickly spent itself, and the infant institution had a struggling and precarious existence. The first appointments of the managers were not altogether fortunate. Rumford, by his arbitrary action, soon created difficulties and alienated powerful supporters. But the advent of Humphry Davy, a small, spare Cornish youth of twenty-three, was the turning-point in its career. On Garnett's resignation in 1801 as lecturer in chemistry, Davy, who had already given proofs of his ability, succeeded to that position. By his extraordinary and rapid success as an investigator, and by a series of discoveries which profoundly impressed the scientific world, combined with his eloquence and power as a lecturer and his remarkable gift of lucid exposition, he quickly changed the whole current of its fortunes, and during the twelve years he occupied its chair of chemistry he gradually stamped upon it the main features of its present character.

The theme of the lecture which the managers have now reprinted was not unfamiliar to Davy's audiences, for, although presented under the guise of a new plan, its general purport had been dealt with by him on several previous occasions. Its leading argument is, in fact, almost identical with that of the no less historic discourses with which he took the fashionable world of London by storm in 1802; and it was repeated in 1809 when he referred to the fund which had been raised to supply him with a powerful voltaic battery, and to which he again alludes with equal pleasure and appreciation in this reprinted address. But in the lecture of 1810 he enters, with his characteristic felicity of phrase, into rather more detail concerning what he considers to be the true function of the Royal Institution, and, on the basis of his ten years' experience of its working, indicates the means by which he considers its aims might be secured. Although he is careful to explain, with that tact and "flexibility of adaptation" which were among the secrets of his success in guiding the fortunes of the institution, that he is only to be regarded as an unofficial exponent of what he apprehends to be in the minds of the managers, visitors, and proprietors, his audience could have been in little doubt with whom the principles of the plan originated.

In 1810 it was fully realised that the continued existence of the institution depended upon Davy, and he certainly was not unconscious of that fact. He was then thirty-two years of age and near the summit of his scientific fame. But however proud the patrons of the institution might be of the achievements of their professor, and however grateful they might feel to him for the lustre he had conferred upon it, its financial position afforded no assurance of even a moderate provision for his future. He had become a social force in what he had styled "the great hot-bed of human power," and his society was courted by all. But the roseate vision of affluence which he had conjured up when exchanging the Pneumatic Institution of Beddoes for the Royal Institution of Rumford had been gradually dissipated in the fuller light of his knowledge of a position which depended upon the vagaries of fashion and the fickleness of popular favour. At this time he had serious thoughts of again turning to a career in medicine, for which, indeed, he was originally intended. It was practically the only career then open to a man of science unless he had the means of a Cavendish or a Banks.

Influential persons, moreover, who thought that Sydney Smith's lectures on moral philosophy would somehow better the condition of the poor, by dangling promises of preferment before him had sought to induce him to devote his eloquence and his talents to the service of the Church. But the little god that so often shapes the destinies of men and women had willed it otherwise. Unmindful of the injunction that a philosopher of another type and of a later age has crystallised in a phrase that has become classical, Davy succumbed to the fascination of a rich and handsome widow, who, as Sir Joseph Banks wrote to his friend Stanton, "had fallen in love with Science" and had elected to marry one of its votaries "to obtain a footing in the academic groves."

Although now within a social sphere very different from that into which he had been born, and to the attractions of which he was by no means insensible, Davy's heart was still true to the mistress that controlled his strongest inclinations and inspired his finest efforts. Science still claimed and secured his allegiance, but, like his contemporaries, Wollaston and Young, he was not destined to grow old in her service. The constant strain of ten years of almost delirious excitement, in which he seemed to pass from triumph to triumph, began to tell upon his nervous and impressionable nature. He had already experienced more than one serious breakdown. After his great discovery of the alkaline metals he utterly collapsed, and for a time his life hung upon a thread. Accordingly, after his marriage in 1812 he decided to resign his lectureship, and, although in deference to the wishes of the managers he still remained titular professor and director of the chemical laboratory, after 1813 he took no very active part in the management of the institution. But a beneficent Fortune still seemed to wait upon it. In the very year of his resignation he discovered Faraday—the greatest of all his discoveries—and the continued existence of the Royal Institution was thereby assured.

The lecture of 1810 may, then, be regarded as a sort of testament in which its author lays down his views concerning the true end and aim of the institution which he had laboured so strenuously and so successfully to establish. Stated in their simplest terms and in his own words, these were: "to apply its funds to useful purposes; to promote the diffusion of science; to encourage discovery; and to exalt the scientific glory of this country." In reviewing its history during the ten short years of its adolescence, Davy could at least claim that it had not been useless to the British public.

> It might, I conceive, be demonstrated (he says) that it has not only assisted the progress of genuine science, but has likewise diffused a general knowledge of the advantages and importance of scientific pursuits, and as far as it has been subservient to amusement, that amusement has been at least of a rational kind, of a moral tendency, and connected with no improper, no undignified objects.

But he is more concerned to dwell upon the promise of its future than upon the performances of its early youth, striking and brilliant though these were, and as his audience knew them to be. The very modesty with which he referred to those achievements must have struck and, indeed, strengthened a sympathetic chord. In a few graphic sentences, with all the charm and elegance of diction which astonished and delighted the intellectual world of London, he rapidly sketched the rise of the sciences and traced their ennobling influence upon civilisation and the progress of the human mind.

The pursuit and cultivation of science and the diffusion of knowledge being then admittedly the primary and fundamental objects of the Royal Institution, he next turned to the details of his plan for attaining them. He dealt with the original scheme of the foundation, pointed out its imperfections, demonstrated the necessity of modifying and enlarging its constitution, and, last but not least in importance, showed how its financial position could be strengthened in view of the extension of its functions that he contemplated.

To the ideals thus developed the institution has been consistently faithful. Its history during the 108 years that have elapsed since the delivery of this historic discourse is, in effect, an epitome of contemporary science, and especially of British science. Its professors and lecturers have always been leaders who have left their impress upon the science and learning of their time; its laboratories have continued to contribute to and augment that renown which the genius of Davy first showered upon it, and its achievements are among the greatest scientific glories of this country.

There is one circumstance associated with this lecture which deserves a passing reference. In 1810, as now, we were at a crisis in our national history, and those who are at all familiar with the conditions of that time will find a hundred analogies in the present happenings. We were then in the throes of a life-and-death struggle with the greatest military genius of his age, the despot who was practically master of Central Europe, and was bent upon the subjugation and humiliation of this kingdom. But there is only the slightest possible allusion in the lecture to the critical conditions of the time—so slight, indeed, that it might well escape the notice of a reader of to-day—merely a half-veiled, contemptuous reference to "all the armies and all the edicts which have lately been so vainly opposed to our prosperity." The calm and resolute courage with which the lecturer and his audience faced the peril of that time may surely inspire and strengthen us with an equal confidence. History is now repeating itself. Let us hope that it will continue to repeat itself, and that, taking heart of grace from the example which has been set us, we may find our faith abundantly justified.

T. E. THORPE.